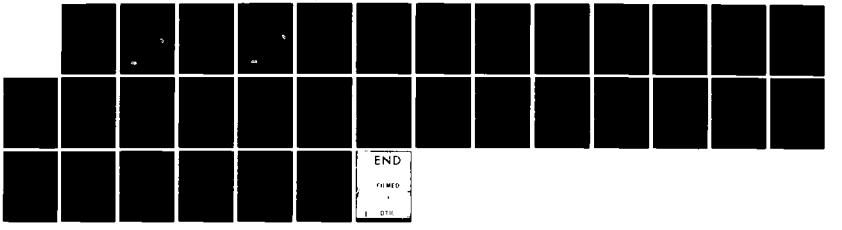
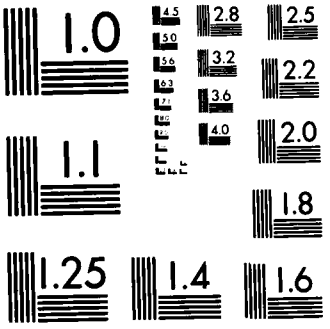
AD-A123 658 VETERAN STATUS AS A SCREENING DEVICE: COMMENT(U) CENTER 1/1
FOR NAVAL ANALYSES ALEXANDRIA VA NAVAL STUDIES GROUP
A QUESTER ET AL. AUG 82 CNA-PP-359 N00014-76-C-0001
UNCLASSIFIED F/G 5/9 NL





PROFESSIONAL PAPER 359 / August 1982

VETERAN STATUS AS A SCREENING DEVICE: COMMENT

(Contract No. N0001 4-76-C-0001

Aline Quester
Jean Fletcher
Alan Marcus

CNA
CENTER FOR NAVAL ANALYSES

PROFESSIONAL PAPER 359 / August 1982

VETERAN STATUS AS A SCREENING DEVICE: COMMENT

Aline Quester
Jean Fletcher
Alan Marcus

Naval Studies Group

CENTER FOR NAVAL ANALYSES

2000 North Beauregard Street, Alexandria, Virginia 22311

VETERAN STATUS AS A SCREENING DEVICE: COMMENT

In a recent article in this review, Dennis De Tray addressed the earnings premium of veterans, a premium sometimes observed empirically.[1] The causes of the premium as well as its magnitude are policy questions of growing importance because our military is manned with young people -- currently over 85 percent are under 35 years of age. In the next decade, as the size of the youth cohort shrinks both proportionally and in absolute magnitude, the wages of the labor pool on which the military draws are expected to rise. While changes in relative wages across age cohorts induce changes in the age mix of employees, the military is generally assumed to have smaller substitution possibilities than other sectors in the economy. Thus the military is expected to employ an increasing fraction of the young male population.

The magnitude of deferred returns from military service is important for evaluating the viability of the All-Volunteer Force. Attractiveness of military enlistment depends upon the value of military compensation relative to civilian compensation, transferability of military training, and the value of veteran status as a signal to potential civilian employers.

De Tray's test of the value of the veteran status signal is both conceptually and empirically flawed. In this note, we examine De Tray's tests. First, we discuss the logical inconsistency of De Tray's central

hypothesis that the proportion of veterans in the civilian population should be positively related to the veteran premium. Second, empirical problems, including measurement error, incorrect specification, and test interpretation are discussed. We supplement De Tray's tests by considering the value of veteran status as a certification screen. Finally, we construct our own test of veteran status as a signal; our results lead us to reject De Tray's conclusion that veteran earning premiums are importantly due to the signalling value of veteran status.

I. PROPORTION VETERAN AND THE VETERAN PREMIUM

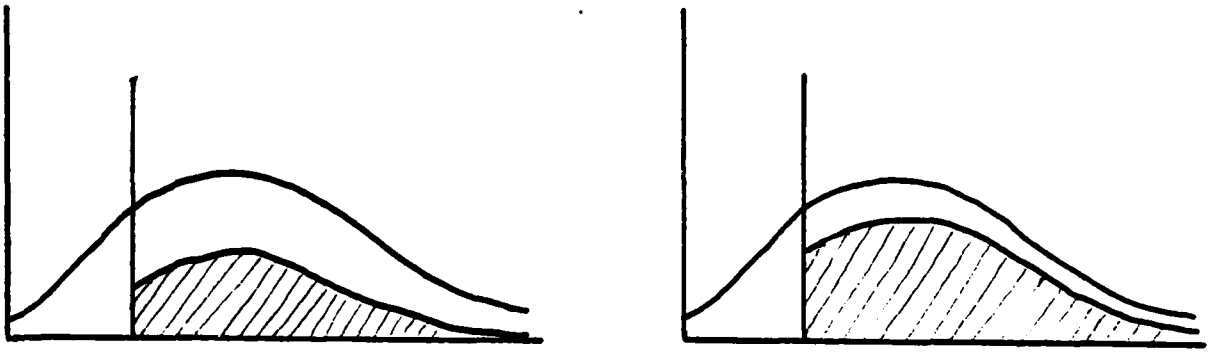
De Tray argues that veteran status could be a meaningful signal to employers for two principal reasons: veterans' mental and physical qualifications are greater than average for their cohort (minimum standards for military service screen out the bottom of the distribution), and veteran status conveys the ability to successfully complete a job (the certification effect). From these observations, he formulates three hypotheses; the primary one states that the "effect of veteran status on civilian earnings will be a positive function of the proportion of men in a given population who claim veteran status" (De Tray, p. 135). It is important to note that this hypothesis does not necessarily follow from the existence of a certification effect. The signal conveyed by successful completion of military service should be independent of cohort proportions.

The signalling function that De Tray tests for his primary, as well as his secondary hypotheses, follows from the mental and physical standards required by the military. Figure 1 illustrates how information from the mental and physical screen is improved when a larger proportion of the cohort has veteran status. The larger the proportion of the cohort who have passed the screen, the higher is the probability that those without military service could not pass the military screen.

Figure 1

Veteran Proportion and Quality Distribution

of Non-Veterans*



Veteran proportion in cohort is shaded. Q is the minimum military standard.

Our conceptual problem concerns the paucity of information conveyed to employers by this screen. The screen indicates that veterans meet at least minimum physical and mental standards (or they did upon entry to the service). The employer can only estimate the probability that non-veterans did not meet minimal standards. Moreover, to estimate this probability, the employer needs to know the proportion of the cohort who are veterans. In contrast, direct employer testing would provide precise quality measures which employers could compare directly to relevant standards for each job.

How expensive, then, is direct employer testing? Is it reasonable that measurable pay differentials would arise because of information from military mental and physical screens? The tests administered by the military are not lengthy: the physical examination takes about one hour and the mental examination three hours. If standardized tests provide information, it would seem cost-effective for employers to test potential employees themselves. Or if, as De Tray implicitly suggests, employers collectively find such a single screen useful, it seems that economies of scale would dictate that a national organization, like the Educational Testing Service, would respond to private demand and establish testing facilities as they have for college entrance. In short, we find it implausible that employers are willing to pay permanent wage differentials for the imperfect minimum-standards signal of veteran status.

II. DE TRAY'S EMPIRICAL ESTIMATES

De Tray does, however, obtain some empirical support for his hypothesis. Before discussing the measurement errors that we suggest generate his results, it is worthwhile to discuss his procedure. Using samples from 1960 and 1970 Census data for black and white males, De Tray estimates four sets of earnings regressions.[2] For black males in 1960, for example, he estimates a separate regression for each of 11 four-year birth cohorts, controlling for schooling, age, veteran status, southern and central city residence.

De Tray then takes the 11 separate coefficients for veteran status and regresses them upon the proportion of veterans in each cohort sample.[3] Since his hypothesis is that the veteran premium is higher the larger the proportion veterans in the cohort, he hypothesizes, and usually finds, a positive sign on the veteran proportion variable.

A. MEASUREMENT PROBLEMS

The first problem is that De Tray's measure -- proportion of a working sample claiming veteran status in each age group -- is a poor proxy for the proportion of each cohort successfully passing the military's mental and physical screen (the shaded portion of the densities in the above diagrams). De Tray's sample excludes the self-

employed, the unemployed, and those out of the civilian labor force. For young cohorts, De Tray's veteran variable systematically understates the proportion who successfully passed the screen: many individuals are still in the military or in school (utilizing the G.I. Bill) and thus outside of the sample.

For older cohorts, the constructed variable has equally serious measurement problems. The military is a youthful organization, especially with respect to entrants. Even in World War II the military accessed virtually no new entrants over the age of thirty. Thus, the results of the screen are defined for any cohort at about thirty years of age -- when the military stops testing and certifying individiuals. One might suspect, then, that the measurement bias eventually goes to zero (as individuals leave the military and show up in De Tray's proportion). But, De Tray's constructed variable fails to stabilize; it continues to grow as the cohort ages.

Particularly for blacks, the constructed variable produces some strange results. For example, in 1960, slightly over one percent of black males aged 42-43 were in the military.[4] If they all left in the period between 1960 and 1970, De Tray's method should identify only a one percent increase in the proportion veteran. However, in De Tray's sample, the proportion veteran jumps from 43 percent in 1960 to 50 percent in 1970 (black males aged 42-43 in 1960 and 52-53 in 1970). Either individuals are incorrectly remembering they were veterans, or else the data have serious selectivity problems.

Measurement errors in independent variables generate inconsistent parameter estimates. Moreover, De Tray's measurement errors are not random. Rather they systematically understate the true proportion of the population with military service for the younger age groups -- groups for which De Tray has small values of the dependent variable. For the older age groups, measurement errors in veteran status are often positive, and the older age groups obtain larger premiums for veteran status. Thus, the dependent variable is positively correlated with the measurement error in the independent variable, creating a spurious upward bias in the regression coefficient.

B. MISSPECIFICATION

In addition to measurement problems, there is a potentially serious misspecification in the wage equations. De Tray does not control for government employment. Controlling for government employment and interacting this variable with veteran status are appropriate since the federal government explicitly gives preferential treatment to veterans. As table 1 shows, veterans are substantially more likely than non-veterans to be employed in the federal sector. Moreover, there is evidence that federal employees receive a wage premium relative to comparably qualified private sector workers (see, for example, Sharon Smith). As a result, the veteran status variable may be reflecting this federal wage premium. We will return to this point in a later section.

TABLE 1

EMPLOYMENT SECTOR DISTRIBUTION

% Employed	Federal	State	Local	Private
White				
Veteran	6.7	3.7	9.1	80.5
Non-veteran	2.3	4.3	9.0	84.4
Black				
Veteran	12.5	4.9	12.8	69.8
Non-veteran	2.7	2.7	11.5	83.1

Source: March 1976, Current Population Survey. All black and whit males aged 22-65.

C. INTERPRETATION PROBLEMS

As a test of screening versus human capital explanations of veteran earnings differentials, De Tray proposes an examination of changes over time in a cohort's veteran premium. De Tray suggests that, if the veteran premium is due to differential human capital investment behavior, the veteran premium will increase over time as returns on earlier investments are recouped. De Tray also suggests that the screening hypothesis predicts change over time in a cohort's veteran premium only if there is a significant change in the proportion veteran. We have already discussed conceptual and measurement problems with the variable "proportion veteran" for a screening test. Here, we will quarrel with De Tray's interpretation of the predictions of the human capital and screening models.

De Tray finds large positive changes in the 1960 to 1970 veteran premium for white cohorts aged 22-27 (in 1960) and positive changes for black cohorts age 22-29 (in 1960). Since his veteran-proportion-measure exihibits the largest changes for these younger age groups, De Tray concludes the screening interpretation has some empirical support. Additionally, he concludes that a human capital model is not appropriate since it would predict longer periods of earnings growth. Our conclusions are different.

One could easily interpret the results of the experiment as supporting the human capital hypothesis. As previously discussed, the true cohort veteran proportion is essentially constant over time. Only the improper veteran proportion that De Tray measures is changing as people leave the military and enter the civilian labor force. Thus, the proportion veteran cannot be part of a test to determine why cohort earnings change.

Earnings changes for older individuals are generally small and hard to estimate. As a result, we are not surprised to find statistically insignificant changes in the veteran premium for older cohorts. Only when earnings are growing rapidly (when individuals are passing from their twenties to their thirties) are the data robust enough to identify the source of differences in earnings. In short, we would emphasize the large positive changes in the veteran premium for the younger cohorts.

rather than the small effects for older cohorts, and argue that this is quite consistent with a human capital interpretation.

While we object to De Tray's interpretation of the 1960-1970 veteran premium comparisons, the results do not unambiguously favor the human capital hypothesis. De Tray has ignored the possible screening effect of sorting individuals into jobs with steeper earnings profiles. (See Riley for an elaboration of this point.) For example, veteran status as a certification screen could induce employers to prefer veterans for jobs for which there is a high company investment in on-the-job training.

Finally, because De Tray tested all of his other hypotheses by regressing the estimated veteran coefficient against the proportion veteran, we find the evidence for these hypotheses as unconvincing as that for the primary hypothesis. As a minor aside, however, we have difficulty accepting the assumption of one hypothesis. De Tray states that because schooling quality for blacks is more varied than for whites, veteran status should be a more useful screen for blacks. His assumption concerns within-cohort variation in schooling quality, not the more commonly identified variance in schooling quality over black cohorts of different schooling vintages. Cross-section schooling quality proxies we identified suggest his assumption is probably not correct. Schooling expenditures per pupil, historically used as a proxy for school quality, and Armed Forces Qualifying Test results, which

index basic verbal and numeric skills, exhibit a lower variance as well as a lower mean for predominantly black schools. (See Link and Ratledge and OASD, Profile of American Youth.)

III. ALTERNATIVE TESTS OF VETERAN STATUS AS A SCREENING DEVICE

In a world of perfect information, signals for labor quality would be redundant. In a world of imperfect information, however, signals can convey otherwise unattainable information about a potential employee's labor quality. Most signalling models, in fact, rely upon the asymmetry in information between the potential employee and the potential employer: although the employee knows his labor quality, the employer does not. Here we perform several tests of veteran screens. These tests do not definitively solve the partitioning problem, but results suggest that the signalling value of veteran status is not as important as human capital and institutional factors in explaining veteran earnings and employment choices.

A. Certification Screen and Wage Premiums

As one test of the screening effects of veteran status, we estimated logarithmic wage equations for 22-65 year old black and white males. The data used were from the 1976 March Current Population Survey. The individuals, like De Tray's, are white or black employed males, aged 22-65. All observations are weighted appropriately. Table

2 reports the full regression results.[5] For blacks, the veteran status coefficient is small and statistically insignificant, as are the interaction terms involving veteran status. This is in direct contrast to De Tray's findings and his second hypothesis, and confirms our earlier concerns about the misspecification of De Tray's wage equations.[6] Apparently, at least for the black sample, much of the veteran premium that De Tray estimates is, in fact, a federal government wage premium.

TABLE 2

ln WAGE REGRESSION[a]

	White	Black
Constant	-.001 (6.8)	-.006 (0.1)
Age	.078 (57.0)	.057 (6.3)
Age^2	-.0009 (44.5)	-.0006 (7.0)
Urban	.124 (17.0)	.232 (7.4)
South	-.068 (9.3)	-.205 (7.7)
School	.027 (9.1)	.020 (1.3)
Age.School	.0005 (8.4)	.00009 (0.3)
Hours	-.010 (27.7)	-.003 (2.1)
Local	-.107 (6.4)	.003 (0.1)

TABLE 2 (Cont'd)

	White	Black
State	-.146 (6.3)	-.177 (1.8)
Fed	.123 (3.8)	.274 (2.9)
Vet	.062 (4.5)	.024 (0.6)
Vet.Local	-.017 (0.8)	.044 (0.6)
Vet.State	.027 (0.8)	.060 (0.5)
Vet.Fed	-.006 (0.2)	-.086 (0.8)
Grad	.050 (3.5)	.082 (1.8)
Vet.Grad	-.025 (1.6)	-.007 (0.1)
R^2	.33	.32
N	19,773	1,654

[a] t statistics are in parentheses. The variables Age, Age^2, School (years completed) and Hours (of work per week) are conventionally measured. Urban, South, Local, State, Fed, Vet, and Grad (high school graduate) are dummy variables which assume the value one if the individual is in the appropriate category. Similarly, the dummy interaction variables (Vet.Local, Vet.State, Vet.Fed, Vet.Grad) assume the value of one for individuals in the category. Finally, Age.School is Age multiplied by School.

The regression results for the white sample indicate that there is a significant veteran premium. Table 3 reports the partial effect of

veteran status on the natural logarithm of wages for private sector and federal government employees. The base group in this table is composed of non-veteran, non-graduate private sector employees. As can be seen, the effect on wages of federal employment is substantially larger than that of veteran status or high school graduation. Nonetheless, the veteran status premium remains, even when interactions are considered.

TABLE 3

PARTIAL EFFECTS ON ln WAGES FOR WHITE MALES

	HS Graduate		Non-Graduate	
	Veteran	Non-Veteran	Veteran	Non-Veteran
	(1)	(2)	(3)	(4)
Private	.087	.050	.062	--
	(6.2)	(3.5)	(4.5)	
Federal	.204	.173	.179	.123
	(9.3)	(5.0)	(8.1)	(3.8)

Source: Regression coefficients in table 2. t statistics are in parentheses.

Earlier, we dismissed the ability signal, based on the proportion veteran, because of the paucity of information it afforded employers compared to tests which could be administered at nominal cost. We would not dismiss the certification effect of veteran status so lightly. Here we refer to the completion of military service. Because it is more difficult for employers to obtain information on quitters and stayers, we might expect employers to use this screen to select potential

employees. The information gained might be similar to the signal of high school graduation.

If the learning process in school is continuous, then a high school graduation dummy variable in an earnings regression which controlled for years of school identifies a "reliability" signal. Table 3 shows evidence of the "graduation" effect. Moreover, if the interation between veteran status and high school graduation is negative (i.e., the signals are substitutes), it provides some support for the veteran status signal argument. The value of this screening test depends, of course, upon the extent to which veteran status and high school graduation convey similar information to employers. For the white sample, we do find a negative interaction between graduation and veteran status which verges on statistical significance, suggesting weak support for veteran status as an alternative screen. The magnitude of this effect, however, is quite small.

B. Employment Sector Selection

Our final test of the signalling value of veteran status follows from the asymmetry of information between employers and employees. We assume an employee knows his own labor quality; potential employers, however, do not. If veteran status is a screen, i.e., employers gain useful information about labor quality from veteran status, then a wage premium for veterans will exist (over and above any

premium due to human capital formation as a result of military training). In contrast, there is no informational value to an individual who chooses to be self-employed. Since a screen improves employer information only, we hypothesize that veterans should be less likely than non-veterans to be self-employed if veteran status is a valuable screening device.[7]

TABLE 4

THE EFFECT OF VETERAN STATUS ON EMPLOYMENT OUTCOMES[a]

	Private	Federal, State or Local Government	Self-Employed	Unemployed or Out of Labor Force
Whites				
Partial derivative	.0172	.0378	-.0019	-.0530
(t-statistic)	(1.20)	(3.55)	(-.21)	(-6.15)
Distribution	69.9%	12.9%	9.1%	8.1%
Blacks				
Partial derivative	-.0405	.0720	-.0022	-.0294
(t-statistic)	(-1.73)	(4.06)	(0.28)	(-1.56)
Distribution	64.3%	15.3%	2.5%	17.9%

[a] The model was estimated controlling for school, age, urban and south. Complete results are available for authors.

We test this hypothesis using the same 1976 Current Population Survey data discussed earlier. Table 4 presents the partial effect of veteran status on employment sector calculated from results of a multinomial logit model of sector choice. The results suggest that the choice of the self-employment sector is independent of veteran status.

Since veterans are as likely as non-veterans to be self-employed, we can reject the hypothesis that the sole value of veteran status is informational. Further support for the value of veterans' human capital comes from the results for the fourth sector choice -- namely, those not employed. Veterans are significantly less likely to be in this category.

Not surprisingly, the results indicate that veterans are significantly more likely than non-veterans to gravitate to the government sector: other things equal, white veterans are 4 percent more likely, and black veterans 7 percent more likely, than non-veterans to be in the government sector. As previously noted, the government sector, by law, screens on veteran status. This screen, however, is not informational; it is an institutionalized reward for service to country.

IV. SUMMARY

It is very difficult to empirically disentangle productivity-related earnings differentials from the "signalling" earnings differentials suggested by Spence. Indeed, signalling can be viewed as an attempt to capture human capital characteristics which are not readily measured or observed.

We do not claim to have definitively explained veteran wage premiums. However, our review of De Tray's hypotheses suggests that his

are poor tests. We have looked at the certification aspect of veteran status signalling, the government wage premium and veteran preference, and the implications of veteran screening for employment sector choice. Our results lead us to reject De Tray's conclusion that the "overall picture... is one of veteran status as a valuable screening device" (De Tray:141). Instead, it appears more likely that military service imparts human capital. In summary, the jury is still out, but productivity enhancement resulting from military training is a likely verdict in the veteran premium case.

FOOTNOTES

*Dr. Aline Quester, Ms. Jean Fletcher, and Mr. Alan Marcus, Center for Naval Analyses.

[1]An earlier review of empirical work concluded that the effect of military service on civilian earnings is negative or insignificant (see Kassing). Little and Fredland found some evidence for veteran premiums.

[2]De Tray uses a data set drawn from the 1/100 Public Use Census tapes. The data was created by Smith and Welch.

[3]In most of his regressions, he appropriately weights the variables by the inverse of the standard error of the regression coefficient. All regressions, however, should be so weighted; to weight only when the procedure "significantly improved the efficiency of the equation" is not acceptable (De Tray, p. 135).

[4]The population in the military is calculated as the difference between the "Total Population including Armed Forces" and the "Civilian Population" (U.S. Bureau of Census).

[5]The appropriate methodology for estimation of these wage regressions would control for selection into the various employment sectors. Estimates using selection-correction techniques were plagued with identification problems and are not reported here.

[6]An F test of the joint value of the veteran variable and all interactions showed joint insignificance. Actually, in less than one third of De Tray's wage regressions for blacks (22 regressions for different age/year groups) is the veteran coefficient statistically significant. De Tray's conclusion that veteran status is a more important screen for blacks than for whites comes from his exercise regressing the generally insignificant veteran premium coefficient against the variable "proportion veteran".

7 An alternate test would be an analysis of veterans' wage premiums in the self-employed sector, but data on wages for this sector are too imprecise to be useful.

REFERENCES

Borjas, George S., "Wage Determination in the Federal Government: the Role of Constituents and Bureaucrats," Journal of Political Economy, December, 1980, 88:1110-1147.

De Tray, Dennis, Veteran Status and Civilian Earnings, The Rand Corporation, R-1929-ARPA, March 1980.

_____, "Veteran Status as a Screening Device," American Economic Review, March 1982, 72:133-142.

Kassing, David, "Military Experience as a Determinant of Veterans Earnings," in Studies Prepared for the President's Commission on an All-Volunteer Armed Force, Vol. II, November 1970.

Layard, Richard, and George Psacharopoulos, "The Screening Hypothesis and the Returns to Education", Journal of Political Economy, October 1974, 82:985-998.

Link, Charles R. and Edward C. Ratledge, "The Influence of Quantity and Quality on Black-White Earnings Differentials: Some New Evidence," Journal of Economics and Statistics, August 1975, LVII: 346-350.

Little, R.D., and J.E. Fredland, "Veteran Status, Earnings and Race: Some Long Term Results", Armed Forces and Society, February 1979, V:244-260.

Office of the Assistant Secretary of Defense, Manpower, Reserve Affairs and Logistics, Profile of American Youth, March 1982.

Riley, John G., "Competitive Signalling", Journal of Eocnomic Theory, April 1975, 10:175-186.

_____, "Testing the Educational Screening Hypothesis, Journal of Political Economy, October 1979, 87:S227-52.

Smith, James P. and Finis Welch, Black-White Earnings and Employment: 1960-1970, The Rand Corporation, R-1666-DOL, September 1974.

_____, "Black-White Male Earnings Ratios, 1960-1970," American Economic Review, June 1977, 67:323-38.

Smith, Sharon P., Equal Pay in the Public Sector: Fact or Fantasy, Princeton, New Jersey:Industrial Relations Section, Department of Economics, 1977.

Spence, Michael A., Market Signalling: Informational Transfer in Hiring and Related Screening Processes, Cambridge: Harvard University Press, 1974.

Stiglitz, Joseph E., "The Theory of Screening, Education and the Distribution of Income", American Economic Review, June 1975, 65:283-300.

U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 519, "Estimates of the Population of the United States, by Age, Sex, and Race: April 1, 1960 to July 1, 1973," U.S. Government Printing Office, Washington, D.C. 1974.

CNA PROFESSIONAL PAPERS - 1978 TO PRESENT*

PP 211
Mizrahi, Maurice M., "On Approximating the Circular Coverage Function," 14 pp., Feb 1978, AD A054 429

PP 212
Mangel, Marc, "On Singular Characteristic Initial Value Problems with Unique Solution," 20 pp., Jun 1978, AD A058 535

PP 213
Mangel, Marc, "Fluctuations in Systems with Multiple Steady States. Application to Lanchester Equations," 12 pp., Feb 78 (Presented at the First Annual Workshop on the Information Linkage Between Applied Mathematics and Industry, Naval PG School, Feb 23-25, 1978), AD A071 472

PP 214
Weinland, Robert G., "A Somewhat Different View of The Optimal Naval Posture," 37 pp., Jun 1978 (Presented at the 1976 Convention of the American Political Science Association (APSA/IUS Panel on "Changing Strategic Requirements and Military Posture"), Chicago, Ill., September 2, 1976), AD A056 228

PP 215
Colle, Russell C., "Comments on: Principles of Information Retrieval by Manfred Kochen," 10 pp., Mar 78 (Published as a Letter to the Editor, Journal of Documentation, Vol. 31, No. 4, pages 298-301), December 1975), AD A054 426

PP 216
Colle, Russell C., "Lotka's Frequency Distribution of Scientific Productivity," 18 pp., Feb 1978 (Published in the Journal of the American Society for Information Science, Vol. 28, No. 6, pp. 366-370, November 1977), AD A054 425

PP 217
Colle, Russell C., "Bibliometric Studies of Scientific Productivity," 17 pp., Mar 78 (Presented at the Annual meeting of the American Society for Information Science held in San Francisco, California, October 1976), AD A054 442

PP 218 - Classified

PP 219
Huntzinger, R. LaVar, "Market Analysis with Rational Expectations: Theory and Estimation," 60 pp., Apr 78, AD A054 422

PP 220
Maurer, Donald E., "Diagonalization by Group Matrices," 26 pp., Apr 78, AD A054 443

PP 221
Weinland, Robert G., "Superpower Naval Diplomacy in the October 1973 Arab-Israeli War," 76 pp., Jun 1978 (Published in Seapower in the Mediterranean: Political Utility and Military Constraints, The Washington Papers No. 61, Beverly Hills and London: Sage Publications, 1979) AD A055 564

PP 222
Mizrahi, Maurice M., "Correspondence Rules and Path Integrals," 30 pp., Jun 1978 (Invited paper presented at the CNRS meeting on "Mathematical Problems in Feynmen's Path Integrals," Marseille, France, May 22-26, 1978) (Published in Springer Verlag Lecture Notes in Physics, 106, (1979), 234-253) AD A055 536

PP 223
Mangel, Marc, "Stochastic Mechanics of Molecule-ion Molecule Reactions," 21 pp., Jun 1978, AD A056 227

PP 224
Manger, Marc, "Aggregation, Bifurcation, and Extinction in Exploited Animal Populations*," 48 pp., Mar 1978, AD A058 536
*Portions of this work were started at the Institute of Applied Mathematics and Statistics, University of British Columbia, Vancouver, B.C., Canada

PP 225
Mangel, Marc, "Oscillations, Fluctuations, and the Hopf Bifurcation*," 43 pp., Jun 1978, AD A058 537
*Portions of this work were completed at the Institute of Applied Mathematics and Statistics, University of British Columbia, Vancouver, Canada.

PP 226
Ralston, J. M. and J. W. Mann,* "Temperature and Current Dependence of Degradation in Red-Emitting GaP LEDs," 34 pp., Jun 1978 (Published in Journal of Applied Physics, 50, 3630, May 1979) AD A058 538
*Bell Telephone Laboratories, Inc.

PP 227
Mangel, Marc, "Uniform Treatment of Fluctuations at Critical Points," 50 pp., May 1978, AD A058 539

PP 228
Mangel, Marc, "Relaxation at Critical Points: Deterministic and Stochastic Theory," 54 pp., Jun 1978, AD A058 540

PP 229
Mangel, Marc, "Diffusion Theory of Reaction Rates, I: Formulation and Einstein-Smoluchowski Approximation," 50 pp., Jan 1978, AD A058 541

PP 230
Mangel, Marc, "Diffusion Theory of Reaction Rates, II Ornstein-Uhlenbeck Approximation," 34 pp., Feb 1978, AD A058 542

PP 231
Wilson, Desmond P., Jr., "Naval Projection Forces: The Case for a Responsive MAF," Aug 1978, AD A054 543

PP 232
Jacobson, Louis, "Can Policy Changes Be Made Acceptable to Labor?" Aug 1978 (Submitted for publication in Industrial and Labor Relations Review), AD A061 528

*CNA Professional Papers with an AD number may be obtained from the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22151. Other papers are available from the Management Information Office, Center for Naval Analyses, 2000 North Beauregard Street, Alexandria, Virginia 22311. An index of Selected Publications is also available on request. The index includes a Listing of Professional Papers; with abstracts; issued from 1969 to June 1981.

PP 233
Jacobson, Louis, "An Alternative Explanation of the Cyclical Pattern of Quits," 23 pp., Sep 1978

PP 234 - Revised
Jondrow, James and Levy, Robert A., "Does Federal Expenditure Displace State and Local Expenditure: The Case of Construction Grants," 25 pp., Oct 1979, AD A061 529

PP 235
Mizrahi, Maurice M., "The Semiclassical Expansion of the Anharmonic-Oscillator Propagator," 41 pp., Oct 1978 (Published in Journal of Mathematical Physics 20 (1979) pp. 844-855), AD A061 538

PP 237
Maurer, Donald, "A Matrix Criterion for Normal Integral Bases," 10 pp., Jan 1979 (Published in the Illinois Journal of Mathematics, Vol. 22 (1978), pp. 672-681

PP 238
Utgoff, Kathleen Classen, "Unemployment Insurance and The Employment Rate," 20 pp., Oct 1978 (Presented at the Conference on Economic Indicators and Performance: The Current Dilemma Facing Government and Business Leaders, presented by Indiana University Graduate School of Business). AD A061 527

PP 239
Trost, R. P. and Warner, J. T., "The Effects of Military Occupational Training on Civilian Earnings: An Income Selectivity Approach," 38 pp., Nov 1979k, AD A077 831

PP 240
Powers, Bruce, "Goals of the Center for Naval Analyses," 13 pp., Dec 1978, AD A063 759

PP 241
Mangel, Marc, "Fluctuations at Chemical Instabilities," 24 pp., Dec 1978 (Published in Journal of Chemical Physics, Vol. 69, No. 8, Oct 15, 1978). AD A063 787

PP 242
Simpson, William R., "The Analysis of Dynamically Interactive Systems (Air Combat by the Numbers)," 160 pp., Dec 1978, AD A063 760

PP 243
Simpson, William R., "A Probabilistic Formulation of Murphy Dynamics as Applied to the Analysis of Operational Research Problems," 18 pp., Dec 1978, AD A063 761

PP 244
Sherman, Allan and Horowitz, Stanley A., "Maintenance Costs of Complex Equipment," 20 pp., Dec 1978 (Published By The American Society of Naval Engineers, Naval Engineers Journal, Vol. 91, No. 6, Dec 1979) AD A071 473

PP 245
Simpson, William R., "The Accelerometer Methods of Obtaining Aircraft Performance from Flight Test Data (Dynamic Performance Testing)," 403 pp., Jun 1979, AD A075 226

PP 246
Brechling, Frank, "Layoffs and Unemployment Insurance," 35 pp., Feb 1979 (Presented at the Nber Conference on "Low Income Labor Markets," Chicago, Jun 1978), AD A096 629

PP 248
Thomas, James A., Jr., "The Transport Properties of Dilute Gases in Applied Fields," 183 pp., Mar 1979, AD A096 464

PP 249
Glasser, Kenneth S., "A Secretary Problem with a Random Number of Choices," 23 pp., Mar 1979

PP 250
Mangel, Marc, "Modeling Fluctuations in Macroscopic Systems," 26 pp., Jun 1979

PP 251
Trost, Robert P., "The Estimation and Interpretation of Several Selectivity Models," 37 pp., Jun 1979, AD A075 941

PP 252
Nunn, Walter R., "Position Finding with Prior Knowledge of Covariance Parameters," 5 pp., Jun 1979 (Published in IEEE Transactions on Aerospace & Electronic Systems, Vol. AES-15, No. 3, Mar 1979

PP 253
Glasser, Kenneth S., "The d-Choice Secretary Problem," 32 pp., Jun 1979, AD A075 225

PP 254
Mangel, Marc and Quanbeck, David B., "Integration of a Bivariate Normal Over an Offset Circle," 14 pp., Jun 1979, AD A096 471

PP 255 - Classified, AD B051 441L

PP 256
Maurer, Donald E., "Using Personnel Distribution Models." 27 pp., Feb 1980, AD A082 218

PP 257
Thaler, R., "Discounting and Fiscal Constraints: Why Discounting Is Always Right," 10 pp., Aug 1979, AD A075 224

PP 258
Mangel, Marc S. and Thomas, James A., Jr., "Analytical Methods in Search Theory," 86 pp., Nov 1979, AD A077 832

PP 259
Glass, David V.; Hsu, Ih-Ching; Nunn, Walter R., and Perin, David A., "A Class of Commutative Markov Matrices," 17 pp., Nov 1979, AD A077 833

PP 260
Mangel, Marc S. and Cope, Davis K., "Detection Rate and Sweep Width in Visual Search," 14 pp., Nov 1979, AD A077 834

PP 261
Vile, Carlos L.; Zvijac, David J. and Ross, John, "Franck-Condon Theory of Chemical Dynamics. VI. Angular Distributions of Reaction Products," 14 pp., Nov 1979 (Reprinted from Journal Chemical Phys. 70(12), 15 Jun 1979), AD A076 287

PP 262
Petersen, Charles C., "Third World Military Elites in Soviet Perspective," 50 pp., Nov 1979, AD A077 835

PP 263
Robinson, Kathy I., "Using Commercial Tankers and Containerships for Navy Underway Replenishment," 25 pp., Nov 1979, AD A077 836

PP 264
Weinland, Robert G., "The U.S. Navy in the Pacific: Past, Present, and Glimpses of the Future," 31 pp., Nov 1979 (Delivered at the International Symposium on the Sea, sponsored by the International Institute for Strategic Studies, The Brookings Institution and the Yomiuri Shimbun, Tokyo, 16-20 Oct 1978) AD A066 837

PP 265
Weinland, Robert G., "War and Peace in the North: Some Political Implications of the Changing Military Situation in Northern Europe," 18 pp., Nov 1979 (Prepared for presentation to the Conference of the Nordic Balance in Perspective: The Changing Military and Political Situation," Center for Strategic and International Studies, Georgetown University, Jun 15-16, 1978) AD A077 838

PP 266
Utgoff, Kathy Classen, and Brechling, Frank, "Taxes and Inflation," 25 pp., Nov 1979, AD A081 194

PP 267
Trost, Robert P., and Vogel, Robert C., "The Response of State Government Receipts to Economic Fluctuations and the Allocation of Counter-Cyclical Revenue Sharing Grants," 12 pp., Dec 1979 (Reprinted from the Review of Economics and Statistics, Vol. LXI, No. 3, August 1979)

PP 268
Thomason, James S., "Seaport Dependence and Inter-State Cooperation: The Case of Sub-Saharan Africa," 141 pp., Jan 1980, AD A081 193

PP 269
Weiss, Kenneth G., "The Soviet Involvement in the Ogaden War," 42 pp., Jan 1980 (Presented at the Southern Conference on Slavic Studies in October, 1979), AD A082 219

PP 270
Remnek, Richard, "Soviet Policy in the Horn of Africa: The Decision to Intervene," 52 pp., Jan 1980 (To be published in "The Soviet Union in the Third World: Success or Failure," ed. by Robert H. Donaldson, Westview Press, Boulder, Co., Summer 1980), AD A081 195

PP 271
McConnell, James, "Soviet and American Strategic Doctrines: One More Time," 43 pp., Jan 1980, AD A081 192

PP 272
Weiss, Kenneth G., "The Azores in Diplomacy and Strategy, 1940-1945, 46 pp., Mar 1980, AD A085 094

PP 273
Nakada, Michael K., "Labor Supply of Wives with Husbands Employed Either Full Time or Part Time," 39 pp., Mar 1980, AD A082 220

PP 274
Nunn, Walter R., "A Result in the Theory of Spiral Search," 9 pp., Mar 1980

PP 275
Goldberg, Lawrence, "Recruiters Advertising and Navy Enlistments," 34 pp., Mar 1980, AD A082 221

PP 276
Goldberg, Lawrence, "Delaying an Overhaul and Ship's Equipment," 40 pp., May 1980, AD A085 095

PP 277
Mangel, Marc, "Small Fluctuations in Systems with Multiple Limit Cycles," 19 pp., Mar 1980 (Published in SIAM J. Appl. Math., Vol. 38, No. 1, Feb 1980) AD A086 229

PP 278
Mizrahi, Maurice, "A Targeting Problem: Exact vs. Expected-Value Approaches," 23 pp., Apr 1980, AD A085 096

PP 279
Walt, Stephen M., "Causal Inferences and the Use of Force: A Critique of Force Without War," 50 pp., May 1980, AD A085 097

PP 280
Goldberg, Lawrence, "Estimation of the Effects of A Ship's Steaming on the Failure Rate of its Equipment: An Application of Econometric Analysis," 25 pp., Apr 1980, AD A085 098

PP 281
Mizrahi, Maurice M., "Comment on 'Discretization Problems of Functional Integrals in Phase Space'," 2 pp., May 1980, published in "Physical Review D", Vol. 22 (1980), AD A094 994

PP 283
Dismukes, Bradford, "Expected Demand for the U.S. Navy to Serve as An Instrument of U.S. Foreign Policy: Thinking About Political and Military Environmental Factors," 30 pp., Apr 1980, AD A085 099

PP 284
J. Kellson,* W. Nunn, and U. Sumita,** "The Laguerre Transform," 119 pp., May 1980, AD A085 100
*The Graduate School of Management, University of Rochester and the Center for Naval Analyses
**The Graduate School of Management, University of Rochester

PP 285
Remnek, Richard B., "Superpower Security Interests in the Indian Ocean Area," 26 pp., Jun 1980, AD A087 113

PP 286
Mizrahi, Maurice M., "On the WKB Approximation to the Propagator for Arbitrary Hamiltonians," 25 pp., Aug 1980 (Published in Journal of Math. Phys., 22(1) Jan 1981), AD A091 307

PP 287
Cope, Davis, "Limit Cycle Solutions of Reaction-Diffusion Equations," 35 pp., Jun 1980, AD A087 114

PP 288
Golman, Walter, "Don't Let Your Slides Flip You: A Painless Guide to Visuals That Really Aid," 28 pp., (revised Aug 1982), AD A092 732

PP 289
Robinson, Jack, "Adequate Classification Guidance - A Solution and a Problem," 7 pp., Aug 1980, AD A091 212

PP 290
Watson, Gregory H., "Evaluation of Computer Software in an Operational Environment," 17 pp., Aug 1980, AD A091 213

PP 291
Maddala, G. S.* and Trost, R. P., "Some Extensions of the Nerlove Press Model," 17 pp., Oct 1980, AD A091 946
*University of Florida

PP 292
Thomas, James A., Jr., "The Transport Properties of Binary Gas Mixtures in Applied Magnetic Fields," 10 pp., Sept 1980 (Published in Journal of Chemical Physics 72(10), 15 May 1980

PP 293
Thomas, James A., Jr., "Evaluation of Kinetic Theory Collision Integrals Using the Generalized Phase Shift Approach," 12 pp., Sept 1980 (Printed in Journal of Chemical Physics 72(10), 15 May 1980

PP 294
Roberts, Stephen S., "French Naval Policy Outside of Europe," 30 pp., Sept 1980 (Presented at the Conference of the Section on Military Studies, International Studies Association Hilton Head Island, S.C.), AD A091 306

PP 295
Roberts, Stephen S., "An Indicator of Informal Empire: Patterns of U.S. Navy Cruising on Overseas Stations, 1869-1897," 40 pp., Sept 1980 (Presented at Fourth Naval History Symposium, US Naval Academy, 26 October 1979, AD A091 316

PP 296
Dismukes, Bradford and Petersen, Charles C., "Maritime Factors Affecting Iberian Security," (Factores Maritimos Que Afectan La Seguridad Ibeica) 14 pp., Oct 1980, AD A092 733

PP 297 - Classified

PP 298
Mizrahi, Maurice M., "A Markov Approach to Large Missile Attacks," 31 pp., Jan 1981, AD A096,159

PP 299
Jondrow, James M. and Levy, Robert A., "Wage Leadership in Construction, 19 pp., Jan 1981, AD A094 797

PP 300
Jondrow, James and Schmidt, Peter,* "On the Estimation of Technical Inefficiency in the Stochastic Frontier Production Function Model," 11 pp., Jan 1981, AD A096 160
*Michigan State University

PP 301
Jondrow, James M., Levy, Robert A. and Hughes, Claire, "Technical Change and Employment in Steel, Autos, Aluminum, and Iron Ore, 17 pp., Mar 1981, AD A099 394

PP 302
Jondrow, James M. and Levy, Robert A., "The Effect of Imports on Employment Under Rational Expectations," 19 pp., Apr 1981, AD A099 392

PP 303
Thomason, James, "The Rarest Commodity in the Coming Resource Wars," 3 pp., Aug 1981 (Published in the Washington Star, April 13, 1981)

PP 304
Duffy, Michael K.; Greenwood, Michael J.* and McDowell, John M.,** "A Cross-Sectional Model of Annual Interregional Migration and Employment Growth: Intertemporal Evidence of Structural Change, 1958-1975," 31 pp., Apr 1981, AD A099 393
*University of Colorado
**Arizona State University

PP 305
Nunn, Laura H., "An Introduction to the Literature of Search Theory," 32 pp., Jun 1981

PP 306
Anger, Thomas E., "What Good Are Warfare Models?" 7 pp., May 1981

PP 307
Thomason, James, "Dependence, Risk, and Vulnerability," 43 pp., Jun 1981

PP 308
Mizrahi, M.M., "Correspondence Rules and Path Integrals," Jul 1981. Published in "Nuovo Cimento B", Vol. 61 (1981)

PP 309
Weinland, Robert G., "An (The?) Explanation of the Soviet Invasion of Afghanistan," 44 pp., May 1981

PP 310
Stanford, Janette *** and Tai Te Wu,* "A Predictive Method for Determining Possible Three-dimensional Foldings of Immunoglobulin Backbones Around Antibody Combining Sites," 19 pp., Jun 1981 (Published in J. theor. Biol. (1981) 88, 421-439
*Northwestern University, Evanston, IL

PP 311
Bowes, Marianne, Brechling, Frank P. R., and Utgoff, Kathleen P. Classen, "An Evaluation of UI Funds," 13 pp., May 1981 (Published in National Commission on Unemployment Compensation's Unemployment Compensation: Studies and Research, Volume 2, July 1980)

PP 312
Jondrow, James; Bowes, Marianne and Levy, Robert, "The Optimum Speed Limit," 23 pp., May 1981

PP 313
Roberts, Stephen S., "The U.S. Navy in the 1980s," 36 pp., Jul 1981

PP 314
Jehn, Christopher; Horowitz, Stanley A. and Lockman, Robert F., "Examining the Draft Debate," 20 pp., Jul 1981

PP 315
Buck, Ralph V., Capt., "Le Catastrophe by any other name...," 4 pp., Jul 1981

PP 316
Roberts, Stephen S., "Western European and NATO Navies, 1980," 20 pp., Aug 1981

PP 317
Roberts, Stephen S., "Superpower Naval Crisis Management in the Mediterranean," 35 pp., Aug 1981

PP 318
Vego, Milan N., "Yugoslavia and the Soviet Policy of Force in the Mediterranean Since 1961," 187 pp., Aug 1981

PP 319
Smith, Michael W., "Antiair Warfare Defense of Ships at Sea," 46 pp., Sep 1981 (This talk was delivered at the Naval Warfare System and Technology Conference of the American Institute of Aeronautics and Astronautics in Washington on December 12, 1980; in Boston on January 20, 1981; and in Los Angeles on June 12, 1981.)

PP 320
Trost, R. P.; Lurie, Philip and Berger, Edward, "A Note on Estimating Continuous Time Decision Models," 15 pp., Sep 1981

PP 321
Duffy, Michael K. and Ladman, Jerry R.,* "The Simultaneous Determination of Income and Employment in United States--Mexico Border Region Economies," 34 pp., Sep 1981
*Associate Professor of Economics, Arizona State University, Tempe, AZ.

PP 322
Warner, John T., "Issues in Navy Manpower Research and Policy: An Economist's Perspective," 66 pp., Dec 1981

PP 323
Bomse, Frederick M., "Generation of Correlated Log-Normal Sequences for the Simulation of Clutter Echoes," 33 pp., Dec 1981

PP 324
Horowitz, Stanley A., "Quantifying Seapower Readiness," 6 pp., Dec 1981 (Published in Defense Management Journal, Vol. 18, No. 2)

PP 326
Roberts, Stephen S., "Western European and NATO Navies, 1981," 27 pp., Jul 1982

PP 327
Hammon, Colin, Capt., USN and Graham, David R., Dr., "Estimation and Analysis of Navy Shipbuilding Program Disruption Costs," 12 pp., Mar 1980

PP 328
Weiniand, Robert G., "Northern Waters: Their Strategic Significance," 27 pp., Dec 1980

PP 329
Mangel, Marc, "Applied Mathematicians And Naval Operators," 40 pp., Mar 1982 (Revised)

PP 330
Lockman, Robert F., "Alternative Approaches to Attrition Management," 30 pp., Jan 1982

PP 331
Roberts, Stephen S., "The Turkish Straits and the Soviet Navy in the Mediterranean," 15 pp., Mar 1982 (Published in Navy International)

PP 332
Jehn, Christopher, "The RDF and Amphibious Warfare," 36 pp., Mar 1982

PP 333
Lee, Lung-Fei and Trost, Robert P., "Estimation of Some Limited Dependent Variable Models with Application to Housing Demand," 26 pp., Jan 1982. (Published in Journal of Econometrics 8 (1978) 357-382)

PP 334
Kenny, Lawrence W., Lee, Lung-Fei, Maddala, G. S., and Trost R. P., "Returns to College Education: An Investigation of Self-Selection Bias Based on the Project Talent Data," 15 pp., Jan 1982. (Published in International Economic Review, Vol. 20, No. 3, October 1979)

PP 335
Lee, Lung-Fei, G.S. Maddala, and R. P. Trost, "Asymptotic Covariance Matrices of Two-Stage Probit and Two-Stage Tobit Methods for Simultaneous Equations Models with Selectivity," 13 pp., Jan 1982. (Published in Econometrica, Vol. 48, No. 2 (March, 1980))

PP 336
O'Neill, Thomas, "Mobility Fuels for the Navy," 13 pp., Jan 1982. (Accepted for publication in Naval Institute Proceedings)

PP 337
Warner, John T. and Goldberg, Matthew S., "The Influence of Non-Pecuniary Factors on Labor Supply," 23 pp., Dec 1981

PP 339
Wilson, Desmond P., "The Persian Gulf and the National Interest," 11 pp., Feb 1982

PP 340
Lurie, Philip, Trost, R. P., and Berger, Edward, "A Method for Analyzing Multiple Spell Duration Data," 34 pp., Feb 1982

PP 341
Trost, Robert P. and Vogel, Robert C., "Prediction with Pooled Cross-Section and Time-Series Data: Two Case Studies," 6 pp., Feb 1982

PP 342
Lee, Lung-Fei, Maddala, G. S., and Trost, R. P., "Testing for Structural Change by D-Methods in Switching Simultaneous Equations Models," 5 pp., Feb 1982

PP 343
Goldberg, Matthew S., "Projecting the Navy Enlisted Force Level," 9 pp., Feb 1982

PP 344
Fletcher, Jean, W., "Navy Quality of Life and Reenlistment," 13 pp., Nov 1981

PP 345
Utgoff, Kathy and Thaler, Dick, "The Economics of Multi Year Contracting," 47 pp., Mar 1982. (Presented at the 1982 Annual Meeting of the Public Choice Society, San Antonio, Texas, March 5-7, 1982)

PP 346
Rostker, Bernard, "Selective Service and the All-Volunteer Force," 23 pp., Mar 1982

PP 347
McConnell, James, M., "A Possible Counterforce Role for the Typhoon," 24 pp., Mar 1982

PP 348
Jondrow, James, Trost, Robert, "An Empirical Study of Production Inefficiency in the Presence of Errors-in-The-Variables," 14 pp., Feb 1982

PP 349
W. H. Breckenridge, O. Kim Malmin, "Collisional Intramultiplet Relaxation of $Cd(5s5p\,^3P_{0,1,2})$ by Alkane Hydrocarbons," 7 pp., Jul 1981. (Published in Journal of Chemical Physics, 76(4), 15 Feb 1982)

PP 350
Levin, Marc, "A Method for Increasing the Firepower of Virginia Class Cruisers," 10 pp., Apr 1982. (To be published in U.S. Naval Institute Proceedings)

PP 351
Coutre, S. E.; Stanford, J. M.; Hovis, J. G.; Stevens, P. W.; Wu, T. T., "Possible Three-Dimensional Backbone Folding Around Antibody Combining Site of Immunoglobulin MOPC 167," 18 pp., Apr 1982. (Published in Journal of Theoretical Biology)

PP 352
Barfoot, C. Bernard, "Aggregation of Conditional Absorbing Markov Chains," 7 pp., June 1982 (Presented to the Sixth European Meeting on Cybernetics and Systems Research, held at the University of Vienna, Apr 1982.)

PP 353
Barfoot, C. Bernard, "Some Mathematical Methods for Modeling the Performance of a Distributed Data Base System," 18 pp., June 1982. (Presented to the International Working Conference on Model Realism, held at Bad Honnek, West Germany, Apr 1982.)

PP 354
Hall, John V., "Why the Short-War Scenario is Wrong for Naval Planning," 6 pp., Jun 1982.

PP 356
Cylke, Steven; Goldberg, Matthew S.; Hogan, Paul; Mairs, Lee; "Estimation of the Personal Discount Rate: Evidence from Military Reenlistment Decisions," 19 pp., Apr 1982.

PP 357
Goldberg, Matthew S., "Discrimination, Nepotism, and Long-Run Wage Differentials," 13 pp., Sep 1982. (Published in Quarterly Journal of Economics, May 1982.)

PP 358
Akst, George, "Evaluating Tactical Command And Control Systems--A Three-Tiered Approach," 12 pp., Sep 1982.

PP 359
Quester, Aline; Fletcher, Jean; Marcus, Alan; "Veteran Status As A Screening Device: Comment," 26 pp., Aug 1982.

PP 361
Quanbeck, David B., "Methods for Generating Aircraft Trajectories," 51 pp., Sep 1982.

PP 362
Horowitz, Stanley A., "Is the Military Budget Out of Balance?," 10 pp., Sep 1982.

PP 363
Marcus, A. J., "Personnel Substitution and Navy Aviation Readiness," 35 pp., Oct 1982.

PP 364
Quester, Aline; Nakada, Michael; "The Military's Monopsony Power," 29 pp., Oct 1982.

PP 366
Spruill, Nancy L., Gastwirth, Joseph L., "On the Estimation of the Correlation Coefficient From Grouped Data," 9 pp., Oct 1982. (Published in the Journal of the American Statistical Association, Sep 1982, Vol. 77, No. 379, Theory and Methods Section.)

PP 370
Rostker, Bernard D., "Human Resource Models: An Overview," 17 pp., Nov 1982.

END

FILMED

2-83

DTIC